

CLAIMS

1. A method for thermally conditioning plastic items comprising the following steps:

- placing at least one plastic item on a chain conveyor or other continuous conveying device,
 - 5 - conveying said at least one plastic item through a first thermal conditioning stage and subjecting it/them to a first heating or cooling heat exchange, which produces a significantly greater heat exchange than would result from placing said at least one plastic item in the environment outside said first thermal conditioning stage for the same amount of time;
 - 10 - removing said at least one plastic item from said first thermal conditioning stage and holding it outside said stage for a predetermined amount of time in order to redistribute the temperature inside said at least one plastic item with a predetermined degree of uniformity;
 - subjecting said at least one plastic item to at least a second heat exchange,
 - 15 which produces a significantly greater heat exchange than would result from placing said at least one plastic item in the environment outside said first thermal conditioning stage for the same amount of time.
2. A method as claimed in claim 1 where said plastic items are preforms or parisons to be blow moulded to form the final containers or similar.
- 20 3. A plant for thermally conditioning plastic items to be blow moulded suitable to implement the method as claimed in claims 1 and/or 2, where said plant comprises the following:
- a chain or other continuous conveying device suitable for conveying at least one plastic item to be thermally conditioned;
 - 25 - a first and second thermal conditioning stage, where each stage is crossed by a length of said chain and is suitable for thermally conditioning by heating and/or cooling said at least one plastic item conveyed on said chain;
- where said chain or other continuous conveying device follows a path suitable for feeding said at least one plastic item to be thermally conditioned through said first
- 30 thermal conditioning stage, removing it from said first heating stage for a predetermined amount of time in order to redistribute the temperature inside said at least one plastic item with a predetermined degree of uniformity, and feeding it

through said second thermal conditioning stage.

4. A plant for thermally conditioning plastic items to be blow moulded suitable for implementing the method as claimed in claims 1 and/or 2, where said plant comprises:

- 5 - a chain or other continuous conveying device suitable for conveying at least one plastic item to be thermally conditioned;
- at least a first thermal conditioning stage that is crossed by a length of said chain and is suitable for thermally conditioning by heating and/or cooling said at least one plastic item conveyed on said chain;

10 wherein said chain or other continuous conveying device follows a path suitable for feeding said at least one plastic item to be thermally conditioned through said first thermal conditioning stage, removing said at least one plastic item from said first heating stage for a predetermined amount of time in order to redistribute the temperature inside said plastic item with a predetermined degree of uniformity,
15 and refeeding said at least one plastic item into said first thermal conditioning stage.

5. A plant as claimed in claim 3 or 4 wherein said chain or other continuous conveying device is suitable for feeding said at least one plastic item to be thermally conditioned through said first and second thermal conditioning stages
20 forming a spiral-type path.

6. A plant as claimed in one or more claims from 3 to 5 wherein said spirals are essentially placed one inside the other.

7. A plant as claimed in one or more claims from 3 to 6 wherein said chain or other continuous conveying device forms a closed path.

25 8. A plant as claimed in claim 7 wherein said chain or other continuous conveying device is articulated in order to be able to bend in the three spatial dimensions and forms essentially a non planar path.

9. A plant as claimed in one or more claims from 3 to 8 wherein at least one of said thermal conditioning stages comprises at least one duct through which said at
30 least one plastic item can be fed on said chain or other continuous conveying device and be conditioned thermally; where said at least one duct is crossed by at least two sections, placed side by side, of said chain or other continuous

conveying device, where said sections each belong to a different spiral of said chain or other continuous conveying device.

10. A plant as claimed in claim 9 comprising at least a heating element suitable for heating by radiation many of said plastic items arranged on at least two sections of said chain, each belonging to a different spiral of said chain, when said plastic items pass side by side in at least one of said ducts.

11. A plant as claimed in one or more claims from 3 to 10 where said two chain sections are equipped with many fastenings suitable for housing a plurality of preforms, and said at least two sections pass side by side through said at least one duct so that said preforms are arranged in an essentially quincunx layout.

12. A plant as claimed in one or more claims from 3 to 11 where said first and second stages of thermal conditioning take place in one or more heating furnaces suitable for heating said at least one plastic item.

13. A plant as claimed in one or more claims from 3 to 9 where said first and second thermal conditioning stages both take place in cooling stations suitable for cooling said at least one plastic item more than would result from placing said at least one plastic item in the environment outside said first and second conditioning stage.

14. A plant as claimed in one or more claims from 3 to 12 comprising a heating furnace where said first and second heating stages both take place in said furnace.

15. A plant as claimed in one or more claims from 3 to 9 comprising a cooling unit and where said first and second thermal conditioning stages both take place in said cooling unit.